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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,888	02/01/2001	Jun Koyama	740756-2255	3194
22204 7590 01/08/2007 NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			EXAMINER WEISS, HOWARD	
			ART UNIT	PAPER NUMBER
			2814	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/774,888	Applicant(s) KOYAMA ET AL.	
	Examiner Howard Weiss	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,77-84,87-90,93-103,105,106 and 108-153 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,77-84,87-90,93-103,105,106 and 108-153 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: 740756-2255

Filing Date: 2/1/01

Continuing Data: RCE established 3/27/2003, 8/19/2004, 10/13/2005 and 11/22/2006

Claimed Foreign Priority Date: 2/1/00 (JPX)

Applicant(s): Koyama et al. (Kato)

Examiner: Howard Weiss

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/22/2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 77 to 84, 87 to 90, 93 to 103, 105, 106 and 108 to 153 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims, as amended, detail that the control gate comprises a laminate film whose component films comprise an inert element (i.e. xenon). However, there is nothing in the Specification, including the figures, which would lead one of ordinary skill in the art to conclude that any inert element becomes part of the laminate film. The section of the Specification cited by the Applicants for support for this limitation (Page 27 Lines 10 to 20) states that an inert element gas (i.e. xenon

etc.) can be used as a sputtering gas. One of ordinary skill in the art would know that an inert element gas is used in sputtering to prevent any of the gas to interact with and contaminate the film being sputtered. This would exclude any inert element being part of said film. The Examiner considers this limitation (i.e. laminate film comprising an inert element such as xenon) to be new matter which falls under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 77, 79 to 81, 83, 84, 87, 89, 90, 93, 95 to 98, 100 to 103, 106, 108 to 111, 113 to 116 and 122 to 149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (JP 11-154714 and the Derwent Translation of this document), Ho et al. (U.S. Patent No. 4,680,854) and Tsutsumi (U.S. Patent No. 5,844,274).

Yamazaki et al. show most aspects of the instant invention (e.g. Figures 1 to 8) including:

- a memory cell array with memory cells formed in a $n \times m$ matrix with X-address **101** and Y-address **102** decoders electrically connected to signal lines **Cnn,Dnn, Amm,Bmm**
- each cell containing a memory thin film transistor (MTFT) **Tr1** and a switching thin film transistor (STFT) **Tr2**
- said MTFT including:
 - a first semiconductor active layer **202** formed on an insulating substrate **201**, having a first thickness **d1** and comprising a channel forming region **205**
 - a first insulating film **211**, a conductive layer (i.e. floating gate electrode) **213** adjacent to the first semiconductive active layer and used to trap electrons, a second insulating film **214** of an oxide and a control gate electrode **215**
 - a wiring **825** for connecting the control gate to a first single line **809**
- said STFT including:
 - a second semiconductor active layer **206** formed on an insulating substrate **201** and having a second thickness **d2**
 - a gate insulating layer **212** and a gate electrode **217**
 - a second signal line **810** connected to said gate electrode
- where in **d1** is thinner (i.e. smaller) than **d2** (Paragraphs 0058 and 0059)

Yamazaki et al. does not show the floating gate comprising silicon with one conductivity, the control gate comprising a laminate of three films: TaN/W/WN and each film comprising the inert element xenon.

Tsutsumi teaches (e.g. Column 17 Lines 14 to 20) it is common, and therefore obvious, to form gate electrodes of layers comprising TaN/W/WN. It would have been obvious to a person of ordinary skill in the art at the time of invention to form

gate electrodes of layers comprising TaN/W/WN as taught by Tsutsumi in the device of Yamazaki et al. since it is common in the art to do so. Also, it is common to use silicon with one conductivity (e.g. doped polysilicon) as floating gate material.

Ho et al. teach (e.g. Column 2 Lines 47 to 59) to put xenon into metal conductive films to prevent hillock and electromigration (Column 1 Lines 38 to 45). It would have been obvious to a person of ordinary skill in the art at the time of invention to put xenon into metal conductive films as taught by Ho et al. in the device of Yamazaki et al. to prevent hillock and electromigration.

6. Claims 117, 118, 120, 121 and 150 to 153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., Ho et al. and Tsutsumi, as applied to Claim 1 above, and further in view Akbar (U.S. Patent No. 5,656,845).

Yamazaki et al., Ho et al. and Tsutsumi show most aspects of the instant invention (Paragraph 5) except for the first and second semiconductor layer in a common semiconductor island. Akbar teaches (e.g. Figures 1 and 8 to 10) to form first and second semiconductor layers in a common semiconductor island (i.e. layer) **122** to provide memory cells with improved performance and reliability (Column 2 Lines 19 to 22). It would have been obvious to a person of ordinary skill in the art at the time of invention to form first and second semiconductor layers in a common semiconductor island as taught by Akbar in the device of Yamazaki et al., Ho et al. and Tsutsumi to provide memory cells with improved performance and reliability.

7. Claims 78, 82, 88, 94, 99, 105 and 112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., Ho et al. and Tsutsumi, as applied to Claim 1 above, and further in view of Koyama (U.S. Patent No. 5,793,344).

Yamazaki et al., Ho et al. and Tsutsumi show most aspects of the instant invention (Paragraph 5) except for the semiconductor device comprising a pixel portion over

the substrate, a source wiring driver circuit for driving the pixel portion over the substrate and a gate wiring driver circuit for driving the pixel portion over the substrate for controlling the non-volatile memory circuit all part of an LCD of a video camera. Koyama teach (Paragraph 3) to use the memory device with the listed devices to produce a high quality display device (Column 7 Lines 55 to 61). It would have been obvious to a person of ordinary skill in the art at the time of invention to use the memory device of Yamazaki et al., Ho et al. and Tsutsumi with the listed devices of Koyama to produce a high quality display device.

8. Claim 119 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., Ho et al., Tsutsumi and Koyama, as applied to Claim 78 above, and further in view of Akbar.

Yamazaki et al., Ho et al., Tsutsumi and Koyama show most aspects of the instant invention (Paragraph 7) except for the first and second semiconductor layer in a common semiconductor island. Akbar teaches (e.g. Figures 1 and 8 to 10) to form first and second semiconductor layers in a common semiconductor island (i.e. layer) **122** to provide memory cells with improved performance and reliability (Column 2 Lines 19 to 22). It would have been obvious to a person of ordinary skill in the art at the time of invention to form first and second semiconductor layers in a common semiconductor island as taught by Akbar in the device of Yamazaki et al., Ho et al., Tsutsumi and Koyama to provide memory cells with improved performance and reliability.

Response to Arguments

9. Applicant's arguments with respect to Claims 1, 77 to 84, 87 to 90, 93 to 103, 105, 106 and 108 to 153 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

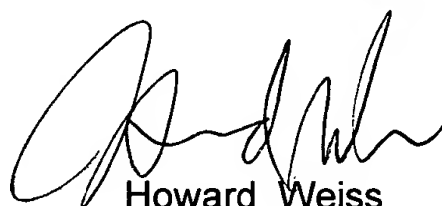
10. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via **Howard.Weiss@uspto.gov**. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.
12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866-217-9197** (toll-free).

Art Unit: 2814

13. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 257/326, 347; 365/ 185.05	thru 12/29/2006
Other Documentation: none	
Electronic Database(s): EAST	thru 12/29/2006

HW/hw
29 December 2006


Howard Weiss
Primary Examiner
Art Unit 2814